Local Spectrum Feature Extraction for Face Recognition

Authors : Muhammad Imran Ahmad, Ruzelita Ngadiran, Mohd Nazrin Md Isa, Nor Ashidi Mat Isa, Mohd ZaizuIlyas, Raja Abdullah Raja Ahmad, Said Amirul Anwar Ab Hamid, Muzammil Jusoh

Abstract : This paper presents two technique, local feature extraction using image spectrum and low frequency spectrum modelling using GMM to capture the underlying statistical information to improve the performance of face recognition system. Local spectrum features are extracted using overlap sub block window that are mapping on the face image. For each of this block, spatial domain is transformed to frequency domain using DFT. A low frequency coefficient is preserved by discarding high frequency coefficients by applying rectangular mask on the spectrum of the facial image. Low frequency information is non Gaussian in the feature space and by using combination of several Gaussian function that has different statistical properties, the best feature representation can be model using probability density function. The recognition process is performed using maximum likelihood value computed using pre-calculate GMM components. The method is tested using FERET data sets and is able to achieved 92% recognition rates.